PATENT APPLICATION

#19

RESPONSE UNDER 37 CFR §1.116
EXPEDITED PROCEDURE
TECHNOLOGY CENTER 1772

To: Examiner
6/28/02

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Keith R. D'ALESSIO et al.

Group Art Unit: 1772

Application No.: 09/430,289

Examiner: S. HON

Filed: October 29, 1999

Docket No.: 100497.02

For: POLYMERIC CONTAINERS FOR 1,1-DISUBSTITUTED MONOMER COMPOSITIONS

REQUEST FOR RECONSIDERATION AFTER FINAL REJECTION

Director of the U.S. Patent and Trademark Office
Washington, D.C. 20231

Sir:

In reply to the Office Action mailed January 24, 2002, Applicants request reconsideration of the application in view of the following remarks.

Claims 1-59 are pending herein. By the Office Action, claims 6-8 and 15 are rejected under 35 U.S.C. §112; claims 1-20, 45-50, 56 and 59 are rejected under 35 U.S.C. §103; and claims 21-44, 51-55 and 57-58 are withdrawn from consideration.

An Information Disclosure Statement with Form PTO-1449 was filed on September 19, 2001. However, Applicants have not received from the Examiner an initialed copy of the Form PTO-1449 to acknowledge the fact that the Examiner has considered the cited information. The Examiner is requested to initial and return to the undersigned a copy of the subject Form PTO-1449. For the convenience of the Examiner, a copy of the subject form is attached.

Applicants thank Examiner Hon for the indication that the previous rejections of claims 10, 11 and 18 under 35 U.S.C. §112 have been withdrawn.

Entry of the attached Declaration is proper under 37 C.F.R. §1.116 because the Declaration, combined with the instant response, places the application in condition for allowance (for the reasons discussed herein) or places the application into better form for Appeal should an Appeal be necessary. The combined response does not present any additional claims without canceling a corresponding number of finally rejected claims, does not raise the issue of new matter, and does not raise any new issues requiring additional search and/or consideration since the issued have been previously considered during prosecution. Furthermore, the Declaration is necessary and was not earlier presented because it is in response to issues raised in the Final Rejection. Applicants respectfully request entry of the Declaration.

I. Restriction Requirement

The Restriction Requirement restricts between Group I (claims 1-20, 45-50, 56 and 59) and Group II (claims 21-44, 51-55 and 57-58). In response to the Restriction Requirement, Applicants previously elected the claims of Group I, with traverse. Confirmation of the election was filed in the U.S. Patent and Trademark Office on May 17, 2001.

Rejoinder of all of the claims is respectfully requested. The claims of Groups I and II are drawn to sufficiently inter-related inventions to warrant examination thereof in a single application. Group I is drawn to a combination including a specified container and a 1,1-disubstituted ethylene monomer composition contained in the container. Group II is drawn to a process for making such a container or combination Compare, for example, claim 1 (Group I) and claim 21 (Group II).

Where product and process claims are presented in the same application, Applicant may be called upon under 35 U.S.C. §121 to elect claims to either the product or process. MPEP §821.04. However, in the case of an elected product claim, rejoinder will be permitted when a product claim is found allowable and the withdrawn process claim depends from or otherwise includes all the limitations of an allowed product claim. Id.

In the present application, the method claims of Group II include all of the limitations of the product of Group I. In particular, all of the limitations of the independent product claim 1 of Group I are incorporated into the method of Group II.

Since the method claims of Group II include the limitations of the product claims of Group I, the method claims must be rejoined with the product claims once the product claims are allowed. Thus, to streamline prosecution and avoid delay, the Restriction Requirement should be withdrawn to permit concurrent examination of all of the pending claims. Applicants respectfully request reconsideration and withdrawal of the Restriction Requirement.

The Office Action acknowledges that the above-requested rejoinder is correct, but argues that rejoinder is premature at this time. Because all of the claims are allowable, for the reasons described below, rejoinder is proper at this time.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the Restriction Requirement.

II. Rejection Under §112

Claims 6-8 and 15 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. In particular, the Office Action argues that it is unclear what the differences are between the polyethylenes. The Office Action further argues that the previous reference submitted by Applicants in response to this rejection did not adequately show the difference in the polyethylenes in terms of density. Applicants respectfully traverse the rejection.

It is well known to one of ordinary skill in the art that "polyethylene" is a term that is used to broadly refer to a closely related group of polymer materials. However, within that broad group of polyethylenes, there are a number of well-known sub-groups of polymers, generally characterized by their density and/or molecular configuration. For example, Applicants previously submitted a copy of a dictionary definition of "polyethylene" from Hawley's Condensed Chemical Dictionary, 13th Ed., pp. 897-98 (1997), which describes the

various types of polyethylene as are described in the claims. In particular, the definition indicated that low density (branched chain) polyethylene generally has a density of about 0.915, and that high density (linear) polyethylene generally has a density of about 0.95.

As further evidence that the various density polyethylenes are well known in the art, Applicants submit the following additional references:

- Roger Grant et al., Ed., Grant & Hackh's Chemical Dictionary, 5th Ed., p. 461 (1987). Describes that polyethylenes can be referred to at least as high density polyethylene (HDPE), linear low density polyethylene (LLDPE), and low density polyethylene (LDPE).

- Douglas M. Considine, P.E., Ed., Van Nostrand's Scientific Encyclopedia, 8th Ed., pp. 2505-2506 (1995). Describes that "polyethylenes are classified primarily on the basis of two characteristics, namely, density and melt index." The reference goes on to describe that the various accepted types include low density polyethylene, medium or intermediate density polyethylene, and high density polyethylene.

- ASTM D 4976-89, "Standard Specification for Polyethylene Plastics Molding and Extrusion Materials," 1995 Annual Book of ASTM Standards, Vol. 08.03 (1995). See, in particular, Table 1 at page 276, which describes low density and medium density branched polyethylenes and low, medium and high density linear polyethylenes.

- ASTM D 2103-92, "Standard Specification for Polyethylene Film and Sheeting," Annual Book of ASTM Standards, Vol. 08.01 (1992). The reference described various polyethylene densities at, for example, Table 1 at page 544.

- ASTM D 1248-84, "Standard Specification for Polyethylene Plastics Molding and Extrusion Materials," Annual Book of ASTM Standards, Vol. 08.03 (1989). The reference described various polyethylene densities at, for example, Table 1 at page 295, and specifically refers to "low density," "medium density" and "high density" at page 295, left column, section 4.1.1.1 Note 3.

Copies of each of these references are enclosed.

These references indicate that the density classification of polyethylene, as used in the description and claims of the present application, and well known and accepted in the art. Thus, the claims are not indefinite.

Accordingly, claims 6-8 and 15 satisfy the requirements of 35 U.S.C. §112, second paragraph. Reconsideration and withdrawal of the rejection are respectfully requested.

III. Rejections Under 35 U.S.C. §103

A. Colvin

1. The Claimed Invention

Claims 1-4, 9, 13-14, 16-17, and 45-46 are rejected under 35 U.S.C. §103(a) over Colvin. Applicants respectfully traverse this rejection.

Independent claim 1 is directed to a combination including: a container comprising a polymeric resin matrix including at least one post-halogenated polymeric material, and a 1,1-disubstituted ethylene monomer composition contained in said container. Similarly, independent claim 45 is directed to a container containing an adhesive monomer composition, comprising: a container comprising a polymeric resin matrix including at least one post-halogenated polymeric material, and an adhesive monomer composition contained in said container. Independent claim 46 is directed to a combination including: a container comprising a polymeric resin matrix including at least one functionalized polymeric material, and a 1,1-disubstituted ethylene monomer composition contained in said container. Claims 2-4, 9,13-14, and 16-17 depend from claim 1. The claimed invention would not have been obvious over the cited reference.

The Office Action argues that Colvin teaches all of the limitations of the claimed invention. The Office Action further argues that any differences between the claimed invention and Colvin are only due to process limitations, which do not affect the claimed products. Applicants respectfully disagree.

2. Colvin Does Not Teach or Suggest Post-Halogenated or Functionalized Materials

Claims 1, 45 and 46 specifically require that the container comprises a polymeric resin matrix, which includes at least one post-halogenated polymeric material or at least one functionalized polymeric material. Such containers are not taught or suggested by Colvin, and are different from the materials and containers taught by Colvin.

Colvin is described in the specification. As described at page 5, lines 1-16 and described in the Office Action, Colvin discloses a container to hold cyanoacrylate ester adhesives. The container has a body that is substantially impermeable to air and moisture to minimize deterioration of the contained adhesive, and has an opening formed of a thermoplastic resin characterized by a low surface free energy. Synthetic resins can be employed as the container material or as a coating on the internal surfaces of a container formed of some other material, provided the resin is selected to satisfy the critical requirements of the invention as regards air and vapor permeability and inertness with respect to initiation of polymerization of the cyanoacrylate monomers. Preferred thermoplastic resins are the halogenated hydrocarbon polymers, especially where the halogen is fluorine, such as polyhexafluoropropylene, polytetrafluoropropylene, polyvinyl fluoride, and polyvinylidene fluoride. Copolymers of ethylene with polymers of the type just named can also be used.

In contrast to the containers of Colvin, the containers of the claimed invention do not utilize pre-halogenated polymers. That is, whereas Colvin discloses the use of pre-halogenated materials such as polyhexafluoropropylene, polytetrafluoropropylene, polyvinyl fluoride, and polyvinylidene fluoride, the claimed invention requires the use of post-halogenated or functionalized polymeric materials. The post-halogenated materials are specifically defined in the specification as those polymers that are halogenated, such as fluorinated, subsequent to formation of the polymer material. Page 8, lines 27-29. Likewise, functionalized materials are defined as materials, other than the described post-halogenated materials, where a protective surface layer is provided, for example, by SO_3H, CO_2H, $CONR_2$, COX, CO_2R, SO_2X, SO_2NH_2, SO_2NR_2, or mixtures thereof. These materials are thus distinct from the pre-halogenated materials of Colvin, where the container is molded using an already halogenated polymer material.

Nowhere does Colvin teach or suggest that the pre-halogenated materials could or should be substituted with post-halogenated or functionalized materials Instead, Colvin teaches only that a pre-halogenated polymer should be molded to form the container. Colvin does not teach or suggest that a two-step process should instead be used, where the container is first molded from a polymer material, and then the molded polymer container is subsequently halogenated or functionalized, as in the claimed invention.

3. The Claimed Post-Halogenated or Functionalized Materials Are Different from the Materials of Colvin

To overcome this deficiency of Colvin, the Office Action argues that the process steps (post-halogenated or functionalized) of the claimed invention do not distinguish over Colvin. The Office Action argues that the containers are presumed to be the same regardless of the means by which they are made. The Office Action provides no reasoning for this assumption. In fact, however, this assumption is incorrect, and the evidence demonstrates that the claimed containers are different from the containers of Colvin.

a. The Present Specification Teaches This Difference

In fact, Applicants submit that the containers of the claimed invention are significantly different from the containers of Colvin. This difference is specifically described in the present specification, which must be accepted as accurate by the Patent Office in the absence of any evidence to the contrary.

At page 20, line 29 to page 21, line 30, the specification describes the additional benefits provided to a container by the post-halogenation or functionalization treatment. In particular, the specification describes the belief that the post-halogenation or functionalization treatment results in residual acid being present in the container matrix, which provides a stabilization effect to a material contained within the container. The specification goes on to describe that such residual acid is generally not present in containers made from pre-halogenated materials, due to the conventional purge processes used to make such containers.

Thus, the present specification clearly and unambiguously describes that the containers of the claimed invention, produced by post-halogenation or functionalization treatments, are different from containers made from pre-halogenated materials such as in Colvin.

b. Colvin Also Teaches This Difference

Furthermore, Colvin itself teaches that his pre-halogenated materials are different from the containers of the claimed invention. In particular, Colvin specifically claims that the containers have a surface free energy that "does not exceed about 35 dynes per cm." See Colvin at claim 1. Colvin further discloses that:

> An important distinguishing feature of the present invention resides in the provision on the container of the invention of dispensing surfaces of a polymeric thermoplastic resin, characterized by a low surface free energy. After careful research, it has been found that resins having this property contribute the unexpected result of inhibiting the cyanoacrylate ester against undergoing significant polymerization on or about these surfaces during or following dispensing of the resin under normal conditions of use.

Col. 3, lines 52-61 (emphasis added). Colvin thus teaches that a low surface energy is required in order to provide the desired goal of inhibiting polymerization.

In stark contrast to the disclosure of Colvin, the post-halogenation process of the claimed invention, such as post-fluorination, in fact results in a much higher surface free energy. For example, characteristics of the post-fluorination process were discussed in the paper entitled "Frequently Asked Questions" available on the internet website of Fluoro-Seal, Inc., a company that specializes in post-fluorination processing, which was submitted with Applicants' previous response..

For example, the Fluoro-Seal materials demonstrate that the post-fluorination is a process where the substrate is exposed to elemental fluorine (page 1 of 9, question "What is the Fluoro-Seal process?"). The process provides a permanent molecular bonding that

endures for decades (page 1 of 9, question "How long will the treatment last?"). See also page 3 of 9, question "How long will the treatment last?".

The materials go on to describe that untreated polyethylene (PE) and polypropylene (PP) are low energy plastics, typically having a low surface free energy (dyne) reading of usually 30-32. See page 5 of 9, question "What is a dyne level test?". The Fluoro-Seal materials describe that the post-fluorination process in fact causes an increase in the surface free energy (dyne) level, providing values of 55 to over 80 dyne/cm^2, values that are in most cases higher than previously obtained by other treatment methods such as flame or corona treatment. See page 5 of 9, question "What is a dyne level test?" and page 6 of 9, question "What are the dyne levels of surface modified fluorinated surfaces?".

Still further, the Fluoro-Seal materials teach that the desired barrier properties are provided by the increased surface free energy. For example, the materials describe that the fluorination treatment results in increased wettability of the resins. See page 6 of 9, question "How does surface modification treatment affect the performance of adhesives?".[1]

Thus, the attached Fluoro-Seal materials, considered in combination with the disclosure of Colvin, demonstrates that the post-halogenated materials of the claimed invention are different from the materials of Colvin. Whereas the materials of Colvin have a low surface free energy, the post-fluorination treatment results in an increased surface free energy. Furthermore, Colvin teaches that the low surface free energy is required, and thus would not have motivated the use of a process known to instead increase the surface free energy.

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[1] In referring to "adhesives," the reference means the ability of adhesives to adhere to the material, for example, to apply a label to the material. The reference does not teach or suggest the use of the treated containers for containing 1,1-disubstituted ethylene monomer compositions.

c. The Attached Declaration Further Establishes The Differences

Still further, the attached Declaration clearly and unambiguously demonstrates the above differences between the post-halogenated or functionalized containers of the claimed invention, and the pre-fluorinated containers of Colvin. In the Final Rejection, the Patent Office argues that the respective containers are assumed to be the same, regardless of the process by which they are made, in the absence of any experimental evidence demonstrating the differences. Although Applicants believe that such evidence is unnecessary, in view of the express disclosures of the present application and Colvin itself, the attached Declaration Under 37 C.F.R. §1.132 provides technical and experimental evidence to demonstrate the differences between the respective container materials.

In particular, the attached Declaration describes three differences between the post-halogenated or functionalized containers of the claimed invention, and the pre-fluorinated containers of Colvin. First, the Declaration describes that the polymeric materials themselves are physically different. The Declaration describes that whereas the post-halogenation or functionalization of the claimed invention provides more of a surface treatment to the container material, the pre-fluorinated materials of Colvin exhibit more uniform and homogenous distribution of the fluorine in the bulk polymer material.

Second, the Declaration demonstrates that the post-halogenated or functionalized materials of the claimed invention exhibit moisture vapor transmission rates substantially equal to transmission rates of non-halogenated materials. In contrast, Colvin emphasizes that low moisture vapor transmission rates are required for the storage of cyanoacrylates, and that such low moisture vapor transmission rates are not provided by untreated (non-fluorinated) materials. For example, Colvin describes that "Adhesive products for the consumer market are typically sold in flexible containers ... formed of a thermoplastic polymer, usually polyethylene or the like. It has been found that such materials ... [are] pervious to sufficient

quantities of air and moisture as to cause reaction of the contents ..." Col. 1, lines 57-64. Colvin goes on to describe that the containers of the disclosed invention are "substantially impermeable to air and moisture." Col. 2, lines 34-43. These disclosures together show that Colvin's pre-fluorinated materials are required to have a vapor transmission rate lower than a rate for non-fluorinated containers. Colvin thus teaches against and away from the post-halogenated or functionalized containers of the claimed invention, which have a vapor transmission rate substantially the same as a virgin container.

Third, the attached Declaration clearly establishes that the post-halogenated or functionalized materials of the claimed invention differ from non-halogenated materials and the pre-fluorinated materials of Colvin in terms of the surface energy of the materials. As described above, Colvin teaches that the pre-fluorination results in materials having a surface energy lower than the surface energy of virgin materials. Colvin also teaches that for the storage of cyanoacrylates, the surface energy of the container must be low, 35 dyne/cm or less. However, as described above and as demonstrated in the attached Declaration, the post-halogenated or functionalized containers of the claimed invention in fact exhibit substantially higher surface energies, of 58 dyne/cm or greater. Not only are these values higher than the maximum permissible value set forth in Colvin, but they are in fact higher than the 46 dyne/cm value determined for the virgin HDPE material itself.

In total, the Declaration demonstrates that the materials are physically different, and that the differences result in different properties of the containers. Furthermore, although Colvin teaches that the containers must have 1) a low surface energy and 2) a low transmission rate, the present specification demonstrates that superior storage results for cyanoacrylates can be achieved using post-halogenated or functionalized containers, which in fact have surface energy and transmission rate properties both opposite to the requirements of Colvin. The attached Declaration thus not only establishes the differences between the

claimed invention and Colvin, but in combination with the present specification also establishes unexpected results of the claimed invention.

d. Conclusion

The claimed invention thus provides significant and unexpected results over Colvin. Nowhere does Colvin teach or suggest that the use of pre-halogenated or functionalized materials would provide any different results or specifically the results of improved barrier properties and improved stabilization.

4. Conclusion

For at least these reasons, Colvin would not have rendered obvious the claimed invention. Reconsideration and withdrawal of the rejection are respectfully requested.

B. Colvin in view of McIntire and Stehlik

Claims 5-6, 8, 10-12, 15, 18-20, 56 and 59 are rejected under 35 U.S.C. §103(a) over Colvin in view of McIntire and Stehlik. Applicants respectfully traverse this rejection.

For all of the reasons discussed above, the invention of independent claims 1, 45 and 46 would not have been obvious to one of ordinary skill in the art. Colvin fails to teach or suggest the use of pre-halogenated or functionalized materials, or the unexpected results in terms of barrier properties and stabilization that such materials provide.

McIntire and Stehlik are cited for various limitations of the dependent claims. However, regardless of their specific disclosures, McIntire and Stehlik fail to overcome the deficiencies of Colvin. In particular, neither McIntire nor Stehlik teaches or suggests the use of pre-halogenated or functionalized materials. Furthermore, neither McIntire nor Stehlik provides any motivation for one of ordinary skill in the art to have modified the disclosed containers of Colvin to practice the claimed invention.

For at least these reasons, any combination of Colvin, McIntire and Stehlik would not have rendered obvious the claimed invention. Reconsideration and withdrawal of the rejection are respectfully requested.

C. Colvin in view of Kvitrud

Claims 7 and 47 are rejected under 35 U.S.C. §103(a) over Colvin in view of Kvitrud. Applicants respectfully traverse this rejection.

For all of the reasons discussed above, the invention of independent claims 1 and 46 would not have been obvious to one of ordinary skill in the art. Colvin fails to teach or suggest the use of post-halogenated or functionalized materials, or the unexpected results in terms of barrier properties and stabilization that such materials provide.

Kvitrud is cited for various limitations of the dependent claims. However, regardless of its specific disclosure, Kvitrud fails to overcome the deficiencies of Colvin. In particular, Kvitrud fails to teach or suggest the use of pre-halogenated or functionalized materials. Furthermore, Kvitrud does not provide any motivation for one of ordinary skill in the art to have modified the disclosed containers of Colvin to practice the claimed invention.

For at least these reasons, any combination of Colvin and Kvitrud would not have rendered obvious the claimed invention. Reconsideration and withdrawal of the rejection are respectfully requested.

D. Colvin in view of Larson

Claims 47-50 are rejected under 35 U.S.C. §103(a) over Colvin in view of Larson. Applicants respectfully traverse this rejection.

For all of the reasons discussed above, the invention of independent claim 46 would not have been obvious to one of ordinary skill in the art. Colvin fails to teach or suggest the use of functionalized materials, or the unexpected results in terms of barrier properties and stabilization that such materials provide.

Larson is cited for various limitations of the dependent claims. However, regardless of its specific disclosure, Larson fails to overcome the deficiencies of Colvin. In particular, Larson fails to teach or suggest the use of functionalized materials for use in forming containers for containing a 1,1-disubstituted ethylene monomer composition, as claimed. Furthermore, neither Colvin nor Larson provides any motivation for one of ordinary skill in the art to have modified the disclosed containers of Colvin by using functionalized polymers instead of pre-halogenated polymers, to practice the claimed invention.

For at least these reasons, any combination of Colvin and Larson would not have rendered obvious the claimed invention. Reconsideration and withdrawal of the rejection are respectfully requested.

IV. Conclusion

In view of the foregoing amendments and remarks, Applicants submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,

William P. Berridge
Registration No. 30,024

Joel S. Armstrong
Registration No. 36,430

WPB:JSA

Attachments:

Form PTO-1449
Roger Grant et al., Ed., Grant & Hackh's Chemical Dictionary, 5th Ed., p. 461 (1987).
Douglas M. Considine, P.E., Ed., Van Nostrand's Scientific Encyclopedia, 8th Ed., pp. 2505-2506 (1995).
ASTM D 4976-89
ASTM D 2103-92
ASTM D 1248-84
Executed Declaration Under 37 C.F.R. §1.132

Date: June 24, 2002

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